AMSAT News Service Weekly Bulletins
Issue: ANS-346
Date: 2016-12-11
Sources: amsat-ans-2016-ans-346-weekly-hyperkitty-be0c10ea37.txt

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AMSAT NEWS SERVICE
ANS-346

The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT North America, The Radio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in Space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

The news feed on http://www.amsat.org publishes news of Amateur Radio in Space as soon as our volunteers can post it.

Please send any amateur satellite news or reports to:
ans-editor at amsat.org.

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SB SAT @ AMSAT $ANS-346.01
ANS-346 AMSAT News Service Weekly Bulletins

AMSAT News Service Bulletin 346.01
>From AMSAT HQ KENSINGTON, MD.
December 11, 2016
To All RADIO AMATEURS
BID: $ANS-346.01

New Satellites on the Horizon

Recent International Amateur Radio Union satellite coordination requests provide new details on several satellites expected to launch before the end of the first quarter of 2017.

The first satellite expected to launch is UBAKUSAT. UBAKUSAT, developed by Istanbul Technical University along with TAMSAT, GUMUSH, and ERTEK Ltd. is a 3U CubeSat with a Mode V/u inverting linear transponder, CW beacon, and a digital telemetry downlink. The transponder downlink frequencies will be 435.200 MHz – 435.250 MHz with an uplink of 145.940 MHz – 145.990 MHz. The CW beacon frequency will be 437.225 MHz and the digital telemetry downlink will be 437.325 MHz. UBAKUSAT will be delivered to the International Space Station aboard the JAXA HTV-6 resupply mission, scheduled for launch on December 9, 2016, for future deployment. The mission is expected

to last 6-12 months.

On December 26, 2016, the China Center for Aerospace Science and Technology's BY70-1 satellite is expected to launch from Jiuquan Satellite Launch Center into a 530 km sun-synchronous orbit. The satellite, a 3-axis stabilized 2U CubeSat with deployable solar panels, will carry a Mode V/u FM transponder with an uplink frequency of 145.920 MHz and a downlink frequency of 436.200 MHz.

On March 31, 2017, two satellites from the Chinese Amateur Satellite Group (CAMSAT) are expected to launch from Taiyuan Satellite Launch Center into a 524 km orbit with an inclination of 42 degrees. The two satellites, CAS-4A and CAS-4B, will be 50 kg mass with 3-axis stabilization carrying optical remote sensing missions. The amateur radio payloads will be similar to the XW-2 series of satellites with Mode U/v linear transponders with power output of 100 mW, 100 mW AX.25 4800 baud GMSK telemetry, and 50 mW CW beacons. Frequencies for these two satellites have not yet been coordinated.

In addition to these satellites, AMSAT's Fox-1Cliff, Fox-1D, and RadFxSat (Fox-1B) satellites carrying Mode U/v FM transponders are all expected to launch in the first half of 2017. Nayif-1, from the Emirates Institution for Advanced Science and Technology (EIAST) and American Univeristy of Sharjah (AUS) carrying a FUNcube Mode U/v linear transponder and telemetry downlink, as well as the U. S. Naval Academy Satellite Lab's QIKcom-2, PSAT-2, and BRICSAT-2 satellites carrying two-way amateur radio payloads are all expected to launch in the first half of 2017. Es'Hail-2, a geostationary satellite carrying AMSAT-DL's Phase 4A payload is scheduled to launch in the third quarter of 2017. AMSAT's RadFxSat-2 (Fox-1E) satellite carrying a Mode V/u linear transponder may also launch in late 2017.

[ANS thanks Paul N8HM for the above information]

Possible Satellite Activity From Virgin Islands

KP4/WP4, U.S. VIRGIN ISLANDS. The "Buddies of the Caribbean", operators Tom/K4ZGB, Bryan/N8WD, Rick/AA4W and Robert/KE4AL, will be active as WP2/K4ZGB, KP2/N8WD, KP2/AA4W and KP2/KE4AL, respectively, from Saint Croix Island (NA-106) between December 6-14th. The location of their DXpedition is from "My Mountain Breeze" which is the location of the station NP2N <http://www.mymountainbreeze.com/page7/page7.html>. They will also be operating from his station and will have a station in the ARRL 10 meter Contest, NPOTA (Salt River Bay, Christiansted, and Buck Island), QRP, and beach operations will also take place. Activity will be on 160-6 meters using CW, SSB and the Digital modes. In addition, they will attempt to make some satellite contacts through SO-50 and AO-85. QSL via LOTW, eQSL or direct to their home callsigns.

[ANS thanks Ohio/Penn DX Bulletin #1294 for the above information]

Obituary for Frank (Robin) Haighton, VE3FRH, (1937-2016)

Robin was a Past Executive Vice President, a past President and a long-time member of the Board of Directors for AMSAT-North America

(AMSAT-NA).

HAIGHTON, F.R.E. "Rob" (1937-2016) P. ENG.
Passed away at Joseph Brant Hospital, on Friday, December 2, 2016, at the age of 79. Beloved husband of Diana (nee Anderson) for 54 years. Cherished father to Andrew (Lois) and Peter (Nichole). Dear grandfather of Amethyst, Emerald, Topaz, Jasper, Rachel, David, Mary and Joanna. Brother of Jill Hill. Born in England, he immigrated to Canada with Diana and Andrew in 1965. Rob was a past Master of Burlington Lodge No.165, A.F. & A.M., a charter member and past Master of Wellington Square Lodge No. 725, A.F. & A.M., member of the Scottish Rite-32nd Degree, the York Rite, White Oak Chapter No.104 of the Royal Arch and very excellent companion of Royal Arch Masonry. Rob, an Active Ham Radio Operator known as VE3FRH, was also a long time member of the Burlington Amateur Radio Club. He was a past president of AMSAT North America and instrumental Founding Member of ARISS space satellite systems. Visitation at SMITH'S FUNERAL HOME, 1167 Guelph Line (one stop light north of QEW), BURLINGTON (905-632-3333), on Sunday, December 18, 2016 from 3-5 pm and 7-9 pm with Masonic Service to begin at 8:30 pm. For those who wish, donations in memory of Rob to the Joseph Brant Memorial Foundation, to the Heart and Stroke Foundation or to a charity of choice would be sincerely appreciated by the family.

Visitations:

Sunday, December 18th, 2016, 3:00pm - 5:00pm
Sunday, December 18th, 2016, 7:00pm - 9:00pm

Smith's Funeral Home - Guelph Line
Address 1167 Guelph Line
Burlington, ON
L7P 2S7

[ANS thanks Smith's Funeral Home for the above information]

Phase 4 Ground Weekly Report

Greetings all! This is the Phase 4 Ground weekly report for the weekend of December 9th 2016. Paul KB5MU sitting in for Michelle.

(Watch the video here: https://youtu.be/Jjn2_NLkMzY)

Generic stream encapsulation for DVB, or GSE for short, is now working in GNU Radio with ping packets! Low latency, high efficiency, and it's available as an out of tree module right now at the following link.

https://github.com/drmpeg/gr-dvbgse

Thank you Dr. MPEG (Ron w6rz)

Why is GSE important? It's the data link layer protocol we've chosen, and therefore binds the universe together. It's efficient and low latency. It allows us to carry packet protocols like IP, ethernet, or whatever through our system. There are several addressing modes and it enables adapative coding and modulation. You can do hardware filtering with it and you can add other link protocols by extension. There are no built-in integrity checks in GSE. That's left up to the physical layer to do. We are confident

that the physical layer is up to the job.

GSE is also used in the terrestrial version of the protocol, DVB-T2. You've heard less about this but it's what we're going to use for terrestrial radio modes. Sharing GSE function between all modes makes for a more consistent design and a bit less work.

The testing continues with GSE using the Ayecka SR1 and SR1 Pro. These are DVB-S2 receivers that claim to do GSE. Three of us purchased the SR1 in anticipation that it would do GSE out of the box and be either a good test equipment choice or possibly one of the many recipes for a Phase 4 Ground radio or both. However, GSE is, if you hunt hard enough, listed as an option that requires another $220 to unlock. And, Ayecka wants to upgrade your receiver remotely, which could be a problem in some IT situations.

Dr. MPEG's early results seem to indicate that there are some bugs in Ayecka's SR1 GSE implementation. That's just further evidence of our early adopter status. Yay us!

We were of course disappointed to find out that GSE was an extra cost option, and nobody like to run into bugs, but kudos to the Ayecka folks for being very responsive with fixes for the GSE issues we've reported.

"Just say no to HLS"

We are soliciting opinions about HLS from Xilinx. This is High-Level Synthesis and is part of the Vivado design environment. It allows C, C++ and System C specifications to be directly targeted into Xilinx All Programmable devices without the need to manually create RTL. Sounds like magic, doesn't it?

Is it something that you have experience with? Is it something you have an opinion about? Xilinx wants to know. Get in touch with me with your feedback.

[ANS thanks Paul KB5MU for the above information]

AMSAT CW Activity Day

January 1, 2017 (UTC) will be AMSAT's first annual CW Activity Day!

As with the old Straight Key Night, this is a fun event, not a contest. It will run for 24 hours on January 1, 2017 (UTC).

All forms of CW are welcome, -- straight keys, bugs, keyers, even keyboards and decoders. Since it is not a contest, there is no required exchange. A QSO is a QSO. Working the same station on more than one satellite is permitted.

Instead of submitting Best Fist nominations, all participants are asked to post their results, including "Soapbox" comments, to AMSAT-BB. Please include the satellites you used, and the number of CW QSOs you had on each. While it is not necessary to post your full log, you may do so if you wish.

[ANS thanks Ray W2RS for the above information]

AMSAT Awards

Congrats to all who have earned an AMSAT Award since the last
posting.

AMSAT Satellite Communicators Award for making their first satellite
QSO
Augustinus Robert Tuanubun, YC8VRA
Kenneth Hitchcock, KB0OQJ
Jacek Zebrowski, W9OOO
Terry Holman, AJ4A

AMSAT Communications Achievement Award
Robert Beatty, WB4SON #569
Dan Koawl, AL7RS, #570
Robert Hinshaw, N6UK, #571
Mac Cody, AE5PH, #572
John Papay, K8YSE/7, #573
Dave Swanson, KG5CCI, #574

AMSAT Sexagesimal Award
Fernando Ramirez-Ferrer, NP4JV #173
Robert Hinshaw, N6UK, #174
Dan Koawl, AL7RS, #175
John Papay, K8YSE/7, #176
Dave Swanson, KG5CCI, #177

AMSAT Century Club Award
Dave Swanson, KG5CCI #48

South Africa Satellite Communications Achievement Award
Robert Hinshaw, N6UK, #US197
Dan Koawl, AL7RS, #US198
Mac Cody, AE5PH, #US199
John Papay, K8YSE/7, #200
Dave Swanson, KG5CCI, #201

AMSAT Robert W. Barbee Jr., W4AMI Award
Cleber Rodrigues, PY3TX, #88
Paul Stoezter, N8HM, Upgrade to 4000
Frank Westphal, K6FW, Upgrade to 2000
John Papay, K8YSE/7, Upgrade to 3000

AMSAT Robert W. Barbee Jr., W4AMI 5000 Award
Paul Stoetzer, N8HM, #33

[ANS thanks Bruce KK5DO for the above information]

AMSAT Events

Information about AMSAT activities at other important events around the country. Examples of these events are radio club meetings where AMSAT Area Coordinators give presentations, demonstrations of working amateur satellites, and hamfests with an AMSAT presence (a table with AMSAT literature and merchandise, sometimes also with presentations, forums, and/or demonstrations).

*Sunday, 8 January, 2017 - Long Island Section Convention at Briarcliffe College in Bethpage, NY

*Saturday, 14 January 2017 – Thunderbird Hamfest 2017 in Phoenix AZ

*Saturday, 4 February 2017 – Palm Springs Hamfest in Palm Springs CA

*Friday-Sunday, 10-12 February 2017 Orlando HamCation in Orlando, FL

*Friday and Saturday, 17-18 February 2017 – Yuma Hamfest in Yuma AZ

*Friday-Sunday, March 31, April 1 & 2, 2017, NVCON in Las Vegas, NV

[ANS thanks AMSAT-NA for the above information]

NEON - NASA Educators Online Network ANNOUNCEMENTS

Free STEM Education Webinars From NASA Educator Professional Development

Audience: In-service, Pre-service, Home School and Informal Educators

The NASA STEM Educator Professional Development Collaborative (EPDC) at Texas State University is presenting a series of free webinars open to all educators. Join NASA education specialists to learn about activities, lesson plans, educator guides and resources that bring NASA into your classroom. Registration is required to participate. To register, simply click on the link provided beneath the webinar description.

December 6, 2016, at 5:00 p.m. ET: Picking Up STEAM: Using Models and Data to Understand Clouds (Grades 4-10) - Practice STEAM through the use of inquiry-based science activities from NASA curriculum guides. The activities and NASA educational websites introduced will provide participants with new curriculum ideas to assist in reaching the Next Generation Science Standards and CORE learning outcomes standards. This STEAM workshop will guide participants through inquiry-based learning activities related to clouds, phase change, light, water cycle, weather and climate. Participants will use authentic data sets to model STEAM lessons. Register online to participate. https://www.etouches.com/205303

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December 6, 2016, at 6:30 p.m. ET: Don't Count NASA Out of Your Math Classes: SpaceMath - Linking Math and Science (Grades 5-8) - Space Mathematics is a two-part series designed to help educators make the

critical linkage between mathematics and science in the classroom. In Part 1 -- Linking Math and Science, participants will survey some of the available NASA resources and discuss the use of science as a vehicle for mathematics instruction. Register online to participate. https://www.etouches.com/199140

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December 7, 2016, at 6:30 p.m. ET: Don't Count NASA Out of Your Math Classes: SpaceMath - Active Math (Grades 5-8) - Space Mathematics is a two-part series designed to help educators make the critical linkage between mathematics and science in the classroom. In Part 2 -- Active Math, participants will explore the use of inquiry to reinforce mathematics skills while engaging students with hands-on activities. Register online to participate. https://www.etouches.com/199142

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December 8, 2016, at 6:30 p.m. ET: Don't Count NASA Out of Your Math Classes: Mass vs Weight (Grades K-12) - Participants will learn about hands-on standards-aligned activities comparing mass and weight. They also will learn about the microgravity environment of the International Space Station. This webinar addresses the Next Generation Science Standards ESS1 and ESS2 and Common Core Math Standards. Register online to participate. https://www.etouches.com/207364

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December 12, 2016, at 6:30 p.m. ET: Don't Count NASA Out of Your Math Classes: Scale of Discovery (Grades K-12) - Participants will engage in hands-on standards-aligned activities using scale to create a scroll of the universe exploring the inner planets, outer planets and the asteroid belt. They also will use mathematical conversions and scale to compare planets and asteroids using various-sized fruit while learning about the Dawn and New Horizons. This webinar addresses the Next Generation Science Standards ESS1 and ESS2 and Common Core Math Standards. Register online to participate. https://www.etouches.com/207360

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December 13, 2016, at 4:00 p.m. ET: Teachers Connect: LaRC Centennial Badge (Grades 6-8) - This webinar will focus for the first half-hour on clouds and their role in Earth’s “energy budget” and on implementation ideas using GLOBE for different classroom settings as part of the “Earth Right Now: LaRC 100th” digital badge. We also will talk about student badge implementations, extension ideas and extra resources. The second half-hour will be very similar but centered on the engineering design process using the Drag Race to Mars Engineering Design Challenge as part of the “Journey to Mars: LaRC 100th” digital badge. This portion of the webinar will focus on forces and motion and math calculations using paper airplanes and testing different materials as part of the “Aeronautics: LaRC 100th” digital badge. This webinar meets requirements of teacher discussions within the NASA Langley 100th Educator Professional Development Collaborative digital badges. To learn more about the Langley 100th digital badges, log in to https://nasatxstate-epdc.net/ and search for LaRC 100th. Register online to participate. https://www.etouches.com/207899

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December 14, 2016, at 6:00 p.m. ET: Don't Count NASA Out of Your Math Classes: So You Want to be a Rocket Scientist? (Grades 4-8) - So you want to be a rocket scientist? Explore the math and science of rockets with NASA missions and STEM curriculum resources. Launch your students' interest in forces and motion with inquiry rocket activities and design challenges that include designing, building and launching simple rockets while recording and analyzing data. Join us in a learning journey "blast-off." Register online to participate. https://www.etouches.com/209754

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December 15, 2016, at 4:00 p.m. ET: Teachers Connect: LaRC Centennial Badge (Grades 6-8) - This webinar will focus for the first half-hour on clouds and their role in Earth's "energy budget" and on implementation ideas using GLOBE for different classroom settings as part of the "Earth Right Now: LaRC 100th" digital badge. We also will talk about student badge implementations, extension ideas and extra resources. The second half-hour will be very similar but centered on the engineering design process using the Drag Race to Mars Engineering Design Challenge as part of the "Journey to Mars: LaRC 100th" digital badge. This portion of the webinar will focus on forces and motion and math calculations using paper airplanes and testing different materials as part of the "Aeronautics: LaRC 100th" digital badge. This webinar meets requirements of teacher discussions within the NASA Langley 100th Educator Professional Development Collaborative digital badges. To learn more about the Langley 100th digital badges, log in to https://nasatxstate-epdc.net/ and search for LaRC 100th. Register online to participate. https://www.etouches.com/207902

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For the NASA STEM Educator Professional Development webinar schedule, go to: http://www.txstate-epdc.net/events/

[ANS thanks NASA Educators Online Network for the above information]

ARISS News

+ A Successful contact was made between Collège Jean Charcot, Saint Malo, France] and Astronaut Thomas Pesquet KG5FYG using Callsign OR4ISS. The contact began Thu 2016-12-08 15:19:45 UTC and lasted about nine and a half minutes. Contact was telebridge via IK1SLD. ARISS Mentor was Joseph F6ICS.

+ A Successful contact was made between The Museum of Innovation and Science (miSci), Schenectady NY, USA and Astronaut Shane Kimbrough KE5HOD using Callsign NA1SS. The contact began Sat 2016-12-10 19:49:54 UTC and lasted about nine and a half minutes. Contact was direct via W2IR.
ARISS Mentor was John K4SQC

Upcoming ARISS Contact Schedule

+ Maristes High School, Toulouse, France, direct via F8IDR
The ISS callsign is presently scheduled to be FXØISS
The scheduled astronaut is Thomas Pesquet KG5FYG
Contact is a go for: Mon 2016-12-12 13:29:47 UTC

+ Scuola Secondaria di Primo Grado “Niccolò Pisano”, Marina di Pisa, Italy, telebridge via IK1SLD
The ISS callsign is presently scheduled to be OR4ISS
The scheduled astronaut is Shane Kimbrough KE5HOD
Contact is a go for: Thu 2016-12-15 12:31:13 UTC (if the HTV launches on time)
Contact is a go for: Sat 2016-12-17 12:23:31 UTC
(if there is a HTV launch delay)

[ANS thanks ARISS, Charlie AJ9N and David AA4KN for the above information]

[ANS thanks ARISS, Charlie AJ9N information]

Satellite Shorts From All Over

+ Tigrisat , the Irak's first cubesat, is transmitting in 435 MhZ at 9K6 FSK G3RUH. It's modulation is very clear and easy to decode to anybody that wants to start to decode this type of satellite. Here you can find a live capture: https://youtu.be/_eo6rqb5EVY

  [ANS thanks Gustavo, LW2DTZ for the above information]

+ Tiny 'Black Magic' Satellite Packs Origami-Like Radar Dish

  NASA challenged engineers to pack an entire satellite dish into a cereal box with Radar in a CubeSat (RainCube), a technology-demonstration mission scheduled for launch in 2017 that will measure rain and snowfall on Earth from space.

  Read more at:
  http://www.space.com/34807-cubesats-pack-origami-radar-dish.html

  [ANS thanks Space.com for the above information]

+ 18th annual LI Section Convention "Getting Started..." Forum.

  The Long Island Section Convention takes place at Briarcliffe College in Bethpage, NY January 8th, 2017, there will be 30 forums.

  Peter Portanova, W2JV, will be doing a forum at 10 AM on ‘Getting Started with the Amateur Satellites”, AMSAT will have a table in the club room to answer your questions. We will be doing demonstrations on the air as time and weather permits, on both the FM and linear transponder satellites. Look for W2JV, or others on the air.

  Tom Gallagher, CEO, of ARRL will be the convention keynote speaker.

  [ANS thanks Peter W2JV for the above information]

+ Call for pictures

  In an effort to improve the AMSAT web site, Joe Fitzgerald, KM1P, requests pictures that are relevant to AMSAT, satellite operations and engineering. Pictures should include a short narrative identifying people and the subject of the picture. Including links to your photo sharing site would be greatly appreciated. Send photos and information to to Webmaster(a)amsat.org.

[ANS thanks Joe KM1P for the above information]

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In addition to regular membership, AMSAT offers membership in the President's Club. Members of the President's Club, as sustaining donors to AMSAT Project Funds, will be eligible to receive additional benefits. Application forms are available from the AMSAT Office.

Primary and secondary school students are eligible for membership at one-half the standard yearly rate. Post-secondary school students enrolled in at least half time status shall be eligible for the student rate for a maximum of 6 post-secondary years in this status. Contact Martha at the AMSAT Office for additional student membership information.

73,
This week's ANS Editor,
EMike McCardel, AA8EM
aa8em at amsat dot org